Proposed Maximum Residue Limit PMRL2018-27

Ethylene bis-dithiocarbamate (EBDC) Fungicides: Mancozeb, Metiram, Maneb and Zineb

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Mancozeb, metiram, maneb and zineb belong to ethylene bis-dithiocarbamate (EBDC) fungicides. Currently, mancozeb, metiram, maneb and zineb residues are regulated under the EBDC maximum residue limits (MRLs), which are established for a number of commodities: apples, broccoli, Brussels sprouts, cabbages, cauliflowers, celery, cucumbers, dry lentils, dry bulb onions, eggplants, endives, grapes, green onions, lettuce, mushrooms, pears, peppers and tomatoes. Other crops with registered uses, including potatoes, are regulated under subsection B.15.002(1) of the Food and Drug Regulations, which requires that residues not exceed 0.1 ppm.

The purpose of this Proposed Maximum Residue Limit (PMRL) document is:

- To revoke the EBDC MRLs,
- To propose residue definitions for mancozeb and metiram, and
- To propose an MRL on potatoes for both mancozeb and metiram.

Under the authority of the *Pest Control Products Act*, Health Canada's Pest Management Regulatory Agency (PMRA) granted continued registration of products containing mancozeb and metiram for sale and use in Canada. The only food use supported is the foliar treatment of potatoes.

Before registering a pesticide for food use in Canada or allowing continued registration, the PMRA must determine the quantity of residues that are likely to remain in or on the food when the pesticide is used according to label directions and that such residues will not be a concern to human health. This quantity is then legally specified as an MRL. An MRL applies to the identified raw agricultural food commodity as well as to any processed food product that contains it, except where separate MRLs are specified for the raw agricultural commodity and a processed product made from it.

Mancozeb
The dietary assessment for mancozeb was published in the PRVD2013-01. Based on the comments received through the consultation process, the dietary risk assessment was revised. In the final re-evaluation decision for mancozeb (RVD2018-21), human health risks were identified for all food uses, except the foliar treatment of potatoes.

Metiram
The dietary assessment for metiram was published in the PRVD2014-03. Based on the scientific data and comments received through the consultation process, the dietary risk assessment was revised. In the final re-evaluation decision for metiram (RVD2018-20), human health risks were identified for all food uses, except the foliar treatment of potatoes.

Maneb and Zineb
As noted in REV2010-14 and REV2008-02, all food uses of maneb and zineb were cancelled and revocation of the corresponding MRLs was recommended.

Therefore, all established MRLs for ethylene bis-dithiocarbamates (EBDCs) are proposed for revocation. Following the revocation of these MRLs, these crops will be regulated under subsection B.15.002(1) of the Food and Drug Regulations, which requires that residues not exceed 0.1 ppm.

Consultation on the revocation of MRLs for EBDCs is being conducted via this document. In addition, consultation on the proposed MRL for mancozeb and metiram on potatoes is being conducted via this document (see Next Steps). A summary of the field trial data used to support the proposed potato MRL can be found in Appendix I.

To comply with Canada's international trade obligations, consultation on the proposed potato MRL, as well as the proposed revocation of the EBDC MRLs, is also being conducted internationally by notifying the World Trade Organization, as coordinated by the Canada's Notification Authority and Enquiry Point.

The proposed MRL and residue definitions, for mancozeb and metiram, are as follows:

Table 1 Proposed Maximum Residue Limit for Mancozeb

Common Name	Residue Definition	MRL (ppm)[1]	Food Commodity
Mancozeb	[[2-[(dithiocarboxy)amino] ethyl] carbamodithioato(2−)-κ*S*,κ*S*'] manganese mixture with [[2-[(dithiocarboxy) amino]ethyl] carbamodithioato (2−)-κ*S*,κ*S*']zinc including the metabolites containing the carbon disulfide moiety (CS_2), measured and expressed as CS_2	0.2	Potatoes

[1] ppm = parts per million

Table 2 Proposed Maximum Residue Limit for Metiram

Common Name	Residue Definition	MRL (ppm)[1]	Food Commodity
Metiram	Metiram including the metabolites containing the carbon disulfide moiety (CS_2), measured and expressed as CS_2	0.2	Potatoes

[1] ppm = parts per million

MRLs established in Canada may be found using the Maximum Residue Limit Database on the Maximum Residue Limits for Pesticides webpage. The database allows users to search for established MRLs, regulated under the *Pest Control Products Act*, both for pesticides or for food commodities.

International Situation and Trade Implications

Mancozeb and Metiram

The MRL proposed for mancozeb and metiram in Canada is the same as corresponding American tolerances and Codex MRLs.[1] American tolerances are listed in the Electronic Code of Federal Regulations, 40 CFR Part 180, by pesticide. A listing of established Codex MRLs is available on the Codex Alimentarius Pesticide Index webpage, by pesticide or commodity.

Revocation of the MRLs for EBDCs

To mitigate human health risks associated with all food uses, all MRLs for EBDCs are proposed for revocation. Table 3 and Table 4 compare the MRLs to be revoked for EBDCs in Canada, for mancozeb and metiram uses respectively, with corresponding American tolerances and Codex MRLs.

There are currently no American tolerances for maneb and zineb listed in the Electronic Code of Federal Regulations, 40 CFR Part 180, by pesticide, nor Codex MRLs listed in or on any commodity on the Codex Alimentarius Pesticide Index webpage.

Table 3 Comparison of Canadian MRLs, American Tolerances and Codex MRLs (where different) – for Mancozeb

Food Commodity	Canadian MRL (ppm)	American Tolerance (ppm)	Codex MRL (ppm)
Apples	Revoked 7 ppm MRL[1]	0.6	5 (Pome fruits)
Broccoli	Revoked 7 ppm MRL[1]	7	Not established
Cabbage	Revoked 7 ppm MRL[1]	9	5
Cucumbers	Revoked 4 ppm MRL[1]	2.0 (Vegetable, cucurbit, group 9)	2
Grapes	Revoked 7 ppm MRL[1]	1.5	5
Lettuce	Revoked 7 ppm MRL[1]	3.5 (Lettuce, head)	0.5 (Head lettuce)
		18 (Lettuce, leaf)	10 (Leaf lettuce)
Dry bulb onions	Revoked 0.5 ppm MRL[1]	1.5	0.5
Pears	Revoked 7 ppm MRL[1]	0.6	5 (Pome fruits)

[1] The Codex Alimentarius Commission is an international organization under the auspices of the United Nations that develops international food standards, including MRLs.

Food Commodity	Canadian MRL (ppm)	American Tolerance (ppm)	Codex MRL (ppm)
Peppers	Revoked 7 ppm MRL[1]	12	Not established
Tomatoes	Revoked 4 ppm MRL[1]	2.5	2

[1] Following the revocation of the EBDC MRLs, all crops will be regulated under subsection B.15.002(1) of the Food and Drug Regulations, which requires that residues not exceed 0.1 ppm.

Table 4 Comparison of Canadian MRLs, American Tolerances and Codex MRLs (where different) – for Metiram

Food Commodity	Canadian MRL (ppm)	American Tolerance (ppm)	Codex MRL (ppm)
Apples	Revoked 7 ppm MRL[1]	0.5	5 (Pome fruits)
Grapes	Revoked 7 ppm MRL[1]	5 (Grape, wine)	5

[1] Following the revocation of the EBDC MRLs, all crops will be regulated under subsection B.15.002(1) of the Food and Drug Regulations, which requires that residues not exceed 0.1 ppm.

Next Steps

The PMRA invites the public to submit written comments on the proposed MRLs for mancozeb and metiram, as well as the proposed revocation of MRLs for EBDCs, up to 75 days from the date of publication of this document. Please forward your comments to Publications (see the contact information on the cover page of this document). The PMRA will consider all comments received before making a final decision on the proposed MRLs for mancozeb and metiram, as well as the revocation of the EBDC MRLs. Comments received will be addressed in a separate document linked to this PMRL.

The established MRLs will be legally in effect as of the date that they are entered into the Maximum Residue Limit Database. The revocation of MRLs will be legally in effect as of the date they are removed from the Maximum Residue Limit Database. The revocation of MRLs will take effect to allow sufficient time for legally treated commodities to clear the channels of trade.

Appendix I

Summary of Field Trial Data Used to Support the Proposed Maximum Residue Limits

Previously reviewed residue data from field trials conducted on potatoes were reassessed to support the continued domestic registration of mancozeb and metiram on this crop as a result of the re-evaluation of these active ingredients.

Maximum Residue Limit

The recommendation for a maximum residue limit (MRL) for mancozeb and metiram was based upon the submitted field trial data, and the guidance provided in the OECD MRL Calculator. Table A1 summarizes the residue data used to calculate the proposed MRL for potatoes.

Table A1 Summary of Field Trial Data Used to Support the MRL

Commodity	Application Method/ Total Application Rate (kg a.i./ha)[1]	Preharvest Interval (days)	Lowest Average Field Trial Residues (ppm)	Highest Average Field Trial Residues (ppm)
Potatoes	Foliar / 4.5–33	0–15	< 0.1 (as CS_2)	0.2 (as CS_2)

[1] kg a.i./ha = kilograms of active ingredient per hectare
CS_2 = carbon disulfide

Following the review of all available data, the MRLs as proposed in Table 1 and Table 2 are recommended to cover residues of mancozeb and metiram, respectively. Residues of mancozeb and/or metiram in potato commodities at the proposed MRL will not pose an unacceptable risk to any segment of the population, including infants, children, adults and seniors.